SEQUENCE LISTING

<110> Birkett, Ashley J.

<120> MALARIA IMMUNOGEN AND VACCINE

<130> 4564/83503 ICC-103.1

<140> 09/931,325
<141> 2001-08-16

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<151> 2000-08-16

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Asp Asp Gln Pro Gly Glu Leu

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<212> DNA
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gttgatcccc cgcgccgttt gctcccggct gattaccggc gccgttcgc 109

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cgcaagctta cggaagtgtt gataggatag gg 32

<210> 110
<211> 8
<212> PRT
<213> Hepatitis B virus

<400> 110
Thr Ser Leu Ile Pro Ala Asn Pro
1 5

<210> 111
<211> 34
<212> DNA
<213> Hepatitis B virus

<400> 111
cgcaagctta tgttgatagg ataggggcat ttgg 34

<210> 112
<211> 7
<212> PRT
<213> Hepatica americana

<400> 112
Leu Ile Pro Ala Asn Pro Pro
1 5

<210> 113
<211> 31
<212> DNA
<213> Hepatitis B virus

<400> 113
cgcaagctta taggataggg gcatttggtg g 31

<210> 114
<211> 6
<212> PRT
<213> Hepatitis B virus

<400> 114
Ile Pro Ala Asn Pro Pro
1 5

<210> 115
<211> 28
<212> DNA
<213> Hepatitis B virus

<400> 115
gcgaagctta gataggggca tttggtgg 28

<210> 116
<211> 6
<212> PRT
<213> Hepatitis B virus

<400> 116
Pro Ala Asn Pro Pro Arg
1 5

<210> 117
<211> 28
<212> DNA
<213> Hepatitis B virus

<400> 117
cgcaagctta aggggcattt ggtggtct 28

<210> 118
<211> 7
<212> PRT
<213> Hepatitis B virus

<400> 118
Cys Pro Ala Asn Pro Pro Arg
1 5

<210> 119
<211> 31
<212> DNA
<213> Hepatitis B virus

<400> 119
gcgaagctta gcaaggggca tttggtggtc t 31

<210> 120
<211> 7
<212> PRT
<213> Hepatitis B virus

<400> 120
Ala Asn Pro Pro Arg Tyr Ala
1 5

<210> 121
<211> 30
<212> DNA
<213> Hepatitis B virus

<400> 121
gcgaagctta ggcatttggt ggtctatagc 30

<210> 122
<211> 8
<212> PRT
<213> Hepatitis B virus

<400> 122
Cys Ala Asn Pro Pro Arg Tyr Ala
1 5

<210> 123
<211> 32
<212> DNA
<213> Hepatitis B virus

<400> 123
gcgaagctta gcaggcattt ggtggtctat aa 32

<210> 124
<211> 7
<212> PRT
<213> Hepatitis B virus

<400> 124
Asn Pro Pro Arg Tyr Ala Pro
1 5

<210> 125
<211> 31
<212> DNA
<213> Hepatitis B virus

<400> 125
cgcaagctta atttggtggt ctataagctg g 31

<210> 126
<211> 8
<212> PRT
<213> Plasmodium falciparum

<400> 126
Asn Ala Asn Pro Asn Val Asp Pro
1 5

<210> 127
<211> 6
<212> PRT
<213> Homo sapiens

<400> 127
Asn Tyr Lys Lys Pro Lys
1 5

<210> 128
<211> 7
<212> PRT
<213> Homo sapiens

<400> 128
Lys Arg Gly Pro Arg Thr His
1 5

<210> 129
<211> 21
<212> PRT
<213> Homo sapiens

<400> 129
Leu His Pro Asp Glu Thr Lys Asn Met Leu Glu Met Ile Phe Thr Pro
1 5 10 15

Arg Asn Ser Asp Arg
20

<210> 130
<211> 5
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 130
Arg Ile Lys Gln Ile
1 5

<210> 131
<211> 11
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 131
Arg Ile Lys Gln Ile Gly Met Pro Gly Gly Lys
1 5 10

<210> 132
<211> 10
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 132
Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
1 5 10

<210> 133
<211> 14
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 133
Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp
1 5 10

<210> 134
<211> 33
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 134
Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His
1 5 10 15

Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile
20 25 30

Leu

<210> 135
<211> 16
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 135
His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg
1 5 10 15

<210> 136
<211> 36
<212> PRT
<213> Human immunodeficiency virus

<400> 136
Tyr Thr His Ile Ile Tyr Ser Leu Ile Glu Gln Ser Gln Asn Gln Gln
1 5 10 15

Glu Lys Asn Glu Gln Glu Leu Leu Ala Leu Asp Lys Trp Ala Ser Leu
20 25 30

Trp Asn Trp Phe
35

<210> 137
<211> 26
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 137
Tyr Thr His Ile Ile Tyr Ser Leu Ile Glu Gln Ser Gln Asn Gln Gln
1 5 10 15

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu
20 25

<210> 138
<211> 19
<212> PRT
<213> Homo sapiens

<400> 138
Gly Arg Glu Arg Arg Pro Arg Leu Ser Asp Arg Pro Gln Leu Pro Tyr
1 5 10 15

Leu Glu Ala

<210> 139
<211> 20
<212> PRT
<213> Homo sapiens

<400> 139
Arg Glu Gln Arg Arg Phe Ser Val Ser Thr Leu Arg Asn Leu Gly Leu
1 5 10 15

Gly Lys Lys Ser
20

<210> 140
<211> 18
<212> PRT
<213> Plasmodium yoelii

<400> 140
Pro Asn Lys Leu Pro Arg Ser Thr Ala Val Val His Gln Leu Lys Arg
1 5 10 15

Lys His

<210> 141
<211> 11
<212> PRT
<213> Plasmodium yoelii

<400> 141
Thr Ala Val Val His Gln Leu Lys Arg Lys His
1 5 10

<210> 142
<211> 22
<212> PRT
<213> Plasmodium vivax

<400> 142
Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala Ala
1 5 10 15

Ala Gly Gln Pro Ala Gly
20

<210> 143
<211> 12
<212> PRT
<213> Avian leukosis virus

<400> 143
Asn Gln Ser Trp Thr Met Val Ser Pro Ile Asn Val
1 5 10

<210> 144
<211> 16
<212> PRT
<213> Avian leukosis virus

<400> 144
Met Ile Lys Asn Gly Thr Lys Arg Thr Ala Val Thr Phe Gly Ser Val
1 5 10 15

<210> 145
<211> 19
<212> PRT
<213> Foot-and-mouth disease virus

<400> 145
Pro Asn Leu Arg Gly Asp Leu Gln Val Leu Ala Gln Lys Val Ala Arg
1 5 10 15

Thr Leu Pro

<210> 146
<211> 26
<212> PRT
<213> Foot-and-mouth disease virus

<400> 146
Arg Tyr Asn Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu Gln Val
1 5 10 15

Leu Ala Gln Lys Val Ala Arg Thr Leu Pro
20 25

<210> 147
<211> 34
<212> PRT
<213> Hepatitis B virus

<400> 147
Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
1 5 10 15

Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu Ser
20 25 30

Gln Cys

<210> 148
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 148
Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro
1 5 10 15

Cys Ser Val Thr
20

<210> 149
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 149
Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro
1 5 10 15

Ala Ser Val Thr
20

<210> 150
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 150
Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro
1 5 10 15

Ala Gly

<210> 151
<211> 36
<212> PRT
<213> Plasmodium vivax

<400> 151
Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp
20 25 30

Asp Gln Pro Gly
35

<210> 152
<211> 9

<212> PRT
<213> Plasmodium vivax

<400> 152
Asp Arg Ala Ala Gly Gln Pro Ala Gly
1 5

<210> 153
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 153
Asp Arg Ala Asp Gly Gln Pro Ala Gly
1 5

<210> 154
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 154
Ala Asn Gly Ala Gly Asn Gln Pro Gly
1 5

<210> 155
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 155
Ala Asn Gly Ala Gly Asp Gln Pro Gly
1 5

<210> 156
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 156
Ala Asn Gly Ala Asp Asn Gln Pro Gly
1 5

<210> 157
<211> 9
<212> PRT
<213> Plasmodium vivax

<400> 157
Ala Asn Gly Ala Asp Asp Gln Pro Gly
1 5

<210> 158
<211> 11
<212> PRT
<213> Plasmodium vivax

<400> 158
Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala
1 5 10

<210> 159
<211> 21
<212> PRT
<213> Plasmodium vivax

<400> 159
Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala Ala
1 5 10 15

Gly Gln Pro Ala Gly
20

<210> 160
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 160
Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly

<210> 161
<211> 19
<212> PRT
<213> Plasmodium vivax

<400> 161
Gln Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp
1 5 10 15

Gln Pro Gly

<210> 162
<211> 44
<212> DNA
<213> Plasmodium vivax

<400> 162
cgcgaattca agcgaacggc gccgataatc agccggcggg tgca 44

<210> 163
<211> 22
<212> PRT
<213> Plasmodium vivax

<400> 163
Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala Asn
1 5 10 15

Gln Glu Gly Gly Ala Ala
20

<210> 164
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: modified portion of Hepatitis B core

<400> 164
Cys Val Val Thr Thr Glu Pro
1 5

<210> 165
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: modified portion of Hepatitis B core

<400> 165
gcaagcttac tattgaattc cgcaaacaac agtagtctcc gg 42

<210> 166
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: modified portion of Hepatitis B core

<400> 166
Thr Thr Val Val Gly Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu
1 5 10 15

Ser Thr Glu Trp Ser Pro Cys Ser Val Thr
20 25

<210> 167
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: modified
portion of Hepatitis B core

<400> 167
Thr Thr Val Val Cys Gly Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser
1 5 10 15

Leu Ser Thr Glu Trp Ser Pro Ala Ser Val Thr
20 25

<210> 168
<211> 217
<212> PRT
<213> Spermophilus variegatus

<400> 168
Met Tyr Leu Phe His Leu Cys Leu Val Phe Ala Cys Val Pro Cys Pro
1 5 10 15

Thr Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Asp Met Asp
20 25 30

Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu Asn Phe
35 40 45

Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp Thr Ala
50 55 60

Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys Ser Pro
65 70 75 80

His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu Leu Thr
85 90 95

Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val Arg Arg
100 105 110

Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val Arg Gln
115 120 125

Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gly His Thr Val
130 135 140

Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro
145 150 155 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu His Thr
165 170 175

```
Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg
            180                 185                 190

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
        195                 200                 205

Arg Ser Gln Ser Pro Ala Ser Asn Cys
    210                 215
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<210> 169
<211> 651
<212> DNA
<213> Spermophilus variegatus

<400> 169
atgtatcttt ttcacctgtg ccttgttttt gcctgtgttc catgtcctac tgttcaagcc 60
tccaagctgt gccttggatg gctttgggac atggacatag atccctataa agaatttggt 120
tcttcttatc agttgttgaa ttttcttcct ttggactttt ttcctgatct caatgcattg 180
gtggacactg ctgctgctct ttatgaagaa gaattaacag gtagggagca ttgttctcct 240
catcatactg ctattagaca ggccttagtg tgttgggaag aattaactag attaattaca 300
tggatgagtg aaaatacaac agaagaagtt agaagaatta ttgttgatca tgtcaataat 360
acttggggac ttaaagtaag acagacttta tggtttcatt tatcatgtct tacttttgga 420
caacacacag ttcaagaatt tttggttagt tttggagtat ggattagaac tccagctcct 480
tatagaccac ctaatgcacc cattttatca actcttccgg aacatacagt cattaggaga 540
agaggaggtt caagagctgc taggtccccc cgaagacgca ctccctctcc tcgcaggaga 600
aggtctcaat caccgcgtcg cagacgctct caatctccag cttccaactg c 651

<210> 170
<211> 183
<212> PRT
<213> Hepatitis B virus

<400> 170
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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
  1               5                  10                  15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
             20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
         35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
     50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
 65                  70                  75                  80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
                 85                  90                  95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110
```

```
Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145                 150                 155                 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
                165                 170                 175

Gln Ser Arg Glu Ser Gln Cys
            180
```

<210> 171
<211> 185
<212> PRT
<213> Hepatitis B virus

<400> 171

```
Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
  1               5                  10                  15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
            20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Gln Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                  90                  95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                 150                 155                 160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
                165                 170                 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
            180                 185
```

<210> 172
<211> 185
<212> PRT
<213> Hepatitis B virus

<400> 172
Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Pro Ser Gln Ser Pro Arg Arg Arg
165 170 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
180 185

<210> 173
<211> 183
<212> PRT
<213> Hepatitis B virus

<400> 173
Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

```
Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
          35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
     50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
 65                  70                  75                  80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val Gly Leu Lys
                 85                  90                  95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145                 150                 155                 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
                165                 170                 175

Gln Ser Arg Glu Ser Gln Cys
            180
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<210> 174
<211> 183
<212> PRT
<213> Marmota monax

<400> 174

```
Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
  1               5                  10                  15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
            20                  25                  30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
     50                  55                  60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65                  70                  75                  80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
                 85                  90                  95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
            100                 105                 110
```

```
His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145                 150                 155                 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
                165                 170                 175

Arg Arg Arg Arg Ser Gln Cys
            180
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<210> 175
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 175
atggacatcg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct 60
tctgacttct ttccttcagt acgagatctt ctagataccg cctcagctct gtatcgggaa 120
gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180
tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttgga agatccagcg 240
tctagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc 300
ttgtggtttc acatttcttg tctcactttt ggaagagaaa cagttataga gtatttggtg 360
tctttcggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420
tcaacacttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480
ccctcgcctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540
tctcaatgt 549

<210> 176
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 176
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct 60
tctgacttct ttccttccgt acgagatctc ctagacaccg cctcagctct gtatcgagaa 120
gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc 180
tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgca agatccagca 240
tccagagatc tagtagtcaa ttatgttaat actaacatgg gtttaaagat caggcaacta 300
ttgtggtttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc 360
tctttcggag tgtggattcg cactcctcca gcctatagac caccaaatgc ccctatctta 420
tcaacacttc cggaaactac tgttgttaga cgacgggacc gaggcaggtc ccctagaaga 480
agaactccct cgcctcgcag acgcagatct caatcgccgc gtcgcagaag atctcaatct 540
cgggaatctc aatgt 555

<210> 177
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 177
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct 60
tctgacttct ttccttccgt cagagatctc ctagacaccg cctcagctct gtatcgagaa 120
gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc 180
tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgga agatccagca 240
tctagggatc ttgtagtaaa ttatgttaat actaacgtgg gtttaaagat caggcaacta 300
ttgtggtttc atatatcttg ccttactttt ggaagagaga ctgtacttga atatttggtc 360
tctttcggag tgtggattcg cactcctcca gcctatagac caccaaatgc ccctatctta 420
tcaacacttc cggaaactac tgttgttaga cgacgggacc gaggcaggtc ccctagaaga 480
agaactccct cgcctcgcag acgcagatct ccatcgccgc gtcgcagaag atctcaatct 540
cgggaatctc aatgt 555

<210> 178
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 178
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct 60
tctgacttct ttccttccgt acgagatctt ctagataccg ccgcagctct gtatcgggat 120
gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180
tgctggggag acttaatgac tctagctacc tgggtgggta ctaatttaga agatccagca 240
tctagggacc tagtagtcag ttatgtcaac actaatgtgg gcctaaagtt cagacaatta 300
ttgtggtttc acatttcttg tctcactttt ggaagagaaa cggttctaga gtatttggtg 360
tcttttggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420
tcaacgcttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480
ccctcgcctc gcagacgaag atctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540
tctcaatgt 549

<210> 179
<211> 549
<212> DNA
<213> Marmota monax

<400> 179
atggacattg acccttataa agaatttgga gctactgtgg agttactctc gtttttgcct 60
tctgacttct ttccttccgt acgagatctt ctagataccg ccgcagctct gtatcgggat 120
gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180
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